

2010 STATE OF THE ENVIRONMENT

IOWA DEPARTMENT OF NATURAL RESOURCES



Rock Creek Lake Watershed, Jasper County

LEADING IOWANS IN CARING FOR OUR NATURAL RESOURCES.

DIRECTOR, Richard Leopold
DEPUTY DIRECTOR, Patricia Boddy



FROM THE DIRECTOR

IOWA DEPARTMENT OF NATURAL RESOURCES



As the fortieth anniversary of Earth Day arrives, we pause to consider the status of Iowa's natural resources with the State of the Environment report. When we identify problem areas and where opportunities lie, we can partner with Iowans to improve our environment and outdoor resources.

The State of the Environment report allows us to gauge the health of our outdoors, looking specifically at eight areas that indicate the health of Iowa's environment. Those areas are interconnected; for example, the number of acres in grasslands directly affects water quality and number of pheasants in the state. Clear water signals good water quality, which means better fishing, swimming and boating. The indicator areas, easily seen and accessible, affect Iowans every day. In developing the report, DNR experts in each area research and evaluate the success of that indicator, including Iowans outdoors, land protection, deer, game birds, wildlife diversity, clean air, clean lakes and water quality.

This year's report shows we've made strides in a number of areas, as more Iowans fish, hunt and camp, and water quality in the state's streams improves. Challenges also exist, as the continuing loss of grassland habitat makes it difficult for pheasant, jackrabbits, prairie chickens and other Iowa species to thrive. However, in 2009, Iowa saw one of its largest investments in environmental protection and natural resource development. This more than \$100 million investment, largely a result of federal stimulus funding, I-JOBS and the Resource Enhancement and Protection program, will no doubt have positive effects on our environment, both short- and long-term.

As we move forward, the DNR will use the results of the State of the Environment report to continually evaluate how to improve our state's environment by working with Iowans. I invite and encourage Iowans to start grassroots, local efforts to improve the natural resources in their own backyards, from wildlife habitat to cleaner lakes and streams. We look forward to partnering with Iowans – in both local groups and statewide organizations – to work together to improve Iowa's environment.

A handwritten signature in blue ink that reads "Richard Leopold".

RICHARD A. LEOPOLD
DNR Director



STATE OF THE ENVIRONMENT

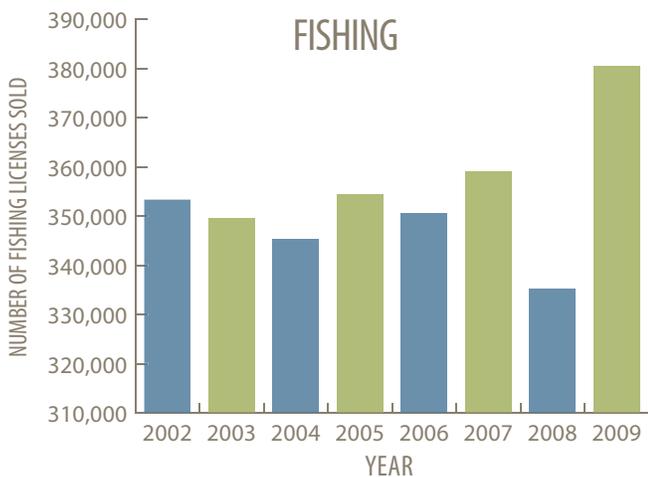
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IOWANS OUTDOORS

More Iowans participated in outdoor activities in 2009 than at any point in the last decade.

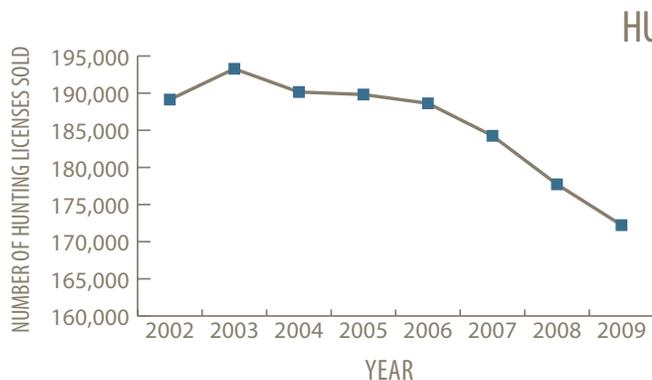
In a time of economic concern for the country, Iowans are rediscovering the natural beauty in their own backyards. Iowa's natural resources provide an inexpensive but relaxing getaway, keeping many Iowans close to home, looking to our state's parks, streams, lakes and hunting grounds for vacations and weekend excursions.



Fishing opportunities abound, with record levels of walleye in our waters. Anglers are breaking panfish harvest records in Iowa's natural lakes. Fishing license sales increased 14 percent since 2008, and trout stamps and trout fishing are thriving. Those great angling opportunities come from improved water quality and fish habitat, results of DNR Lake Restoration and Watershed Improvement work with local communities. Extensive research and better management principles ensure the DNR stocks the right kind of fish at the right time of year in the right waters.

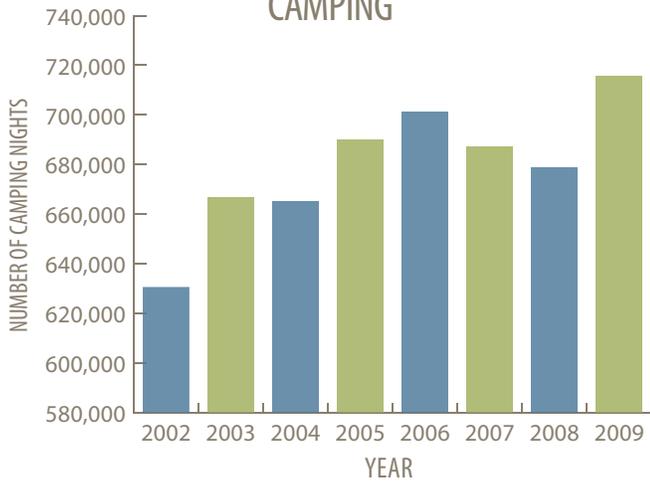


Big Creek Lake



There remain a number of challenges for hunting in Iowa, from a loss of access to private land for hunting to the wrath of weather. Hunting license sales have dropped as harsh winters and wet spring weather reduce hunting prospects for turkey and upland game, like pheasants, quail and cottontail rabbits. Yet, while deer populations keep close to management goals in most Iowa counties, hunters still have a great opportunity to bring home a buck or doe.

CAMPING



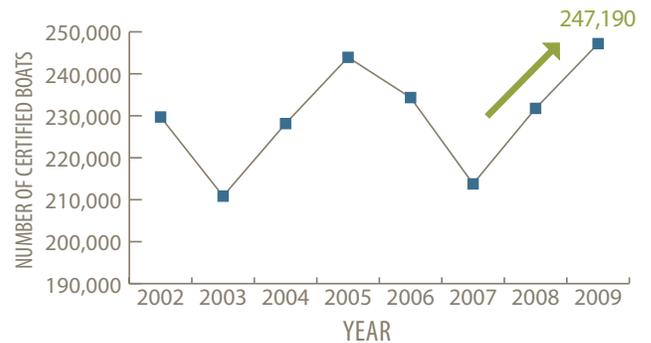
Cherry Glen Campground at Saylorville Lake

Following an overall decline in camping in the past decade or so, 2009 saw Iowans return to the campfire. Camping guest days (counted as one person spending one night) increased by 4 percent in 2009 compared to the previous two to three years.

BOATING & PADDLING



Des Moines River



More boaters are taking to Iowa's waters, especially anglers, with about 247,000 boats certified in the state. That's an increase of 15,000 over last year and doesn't include most kayaks that take to Iowa's 249 miles of water trails. Another 930 miles of water trails are under development, and the DNR continues its work to provide safe portage around low-head dams for paddlers, boaters and anglers.

INCREASED OPPORTUNITY

Iowans enjoy more than 2,000 miles of trails for biking, hiking, skating, skiing, equestrian use and simple nature walks. Iowans find a number of other ways to get involved in the outdoors, from attending bald eagle watch events to swimming at our lakes' beaches, watching wildlife and songbirds, to name a few. More than 150 Iowa schools take part in the National Archery in the Schools Program, and more than 900 young trapshooters participate in the Iowa High School/Scholastic Clay Target Program. In addition, volunteers logged more than 93,000 hours with the Iowa DNR in 2009.



"Today, more than ever, younger Iowans are looking for opportunities to connect their children and reconnect themselves to the beauty and wonder of Iowa's 'Breathing Spaces'. No matter you interest - biking, boating, camping, fishing, hiking, swimming or just 'chillin' - exploring Iowa's Parks, Forests and Preserves is the first step for creating memories and new family traditions by connecting people to the natural world."

Kent Sovern,
Executive Director of the Iowa Parks Foundation



LAND PROTECTION

The amount of land protected for conservation continues to decline, but at a lesser rate than last year.

It all comes down to the land. Clean air and water, healthy wildlife and recreation opportunities all stem from the health of the landscape. Iowa continued to lose critical grassland habitat, although not as steep a decline as last year.

The impact of flooding

The protection of our state's natural resources relies on decisions made on private land – about 98 percent of Iowa's 36 million acres is privately owned. The 2008 floods showed that how we manage land can affect flooding's impact. As floodwaters receded, Iowans enrolled frequently flooded farmland into federal and state conservation programs. By restoring and protecting floodplains with permanent easements, wildlife habitat, water quality and fish habitat all improve. It also reduces erosion and protects people and property. In 2009, the programs protected about 5,000 acres.

New lands

The DNR and other Iowa conservation organizations also acquired new land from owners who wanted to permanently protect land but not manage it. That includes land in the Iowa River's natural floodplain. Now a national wildlife refuge, the Louisa County land provides wildlife habitat and temporary floodwater storage, and improves water quality. Public lands like this give all Iowans the ability to experience the outdoors. In 2009, the DNR and Iowa county conservation boards added more than 9,300 acres of public land.

Continued loss of CRP

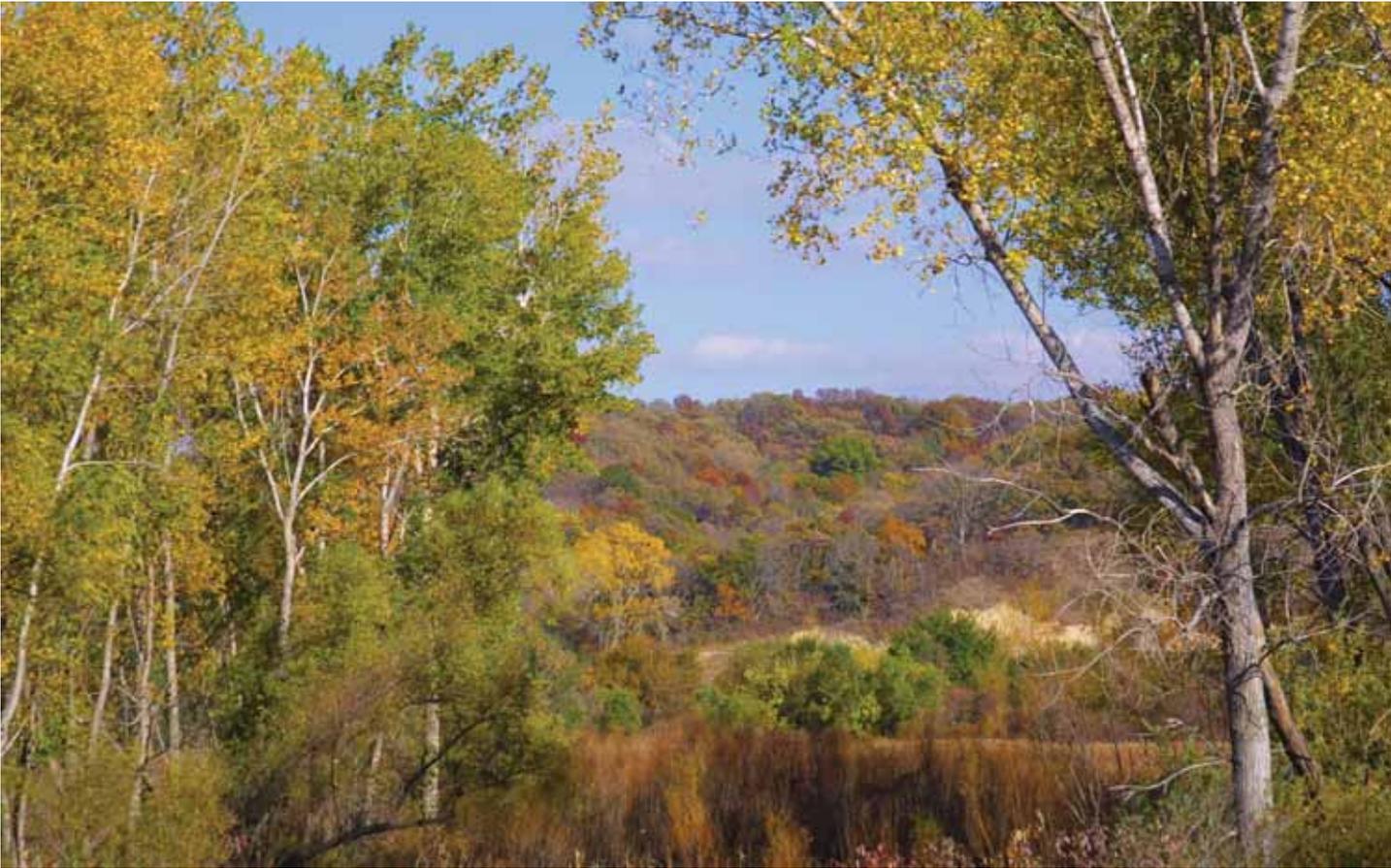
While the floodplain programs made great strides in permanently protecting land, acres in the Conservation Reserve Program (CRP) continued to drop. CRP provides landowners with rental payments to plant land to perennial vegetation like prairie grasses, providing crucial habitat for wildlife, especially pheasants, and improving water quality. But it's not permanent, and landowners can decide to take land out of the program. The number of acres in CRP fell by 64,000 from 2008 and by 354,000 since 2007, putting it at the lowest level since 2000. Grasslands and small grains outside of CRP, important habitat for increasingly rare species like jackrabbits and prairie chickens, also continue to shrink.

Adding conservation practices

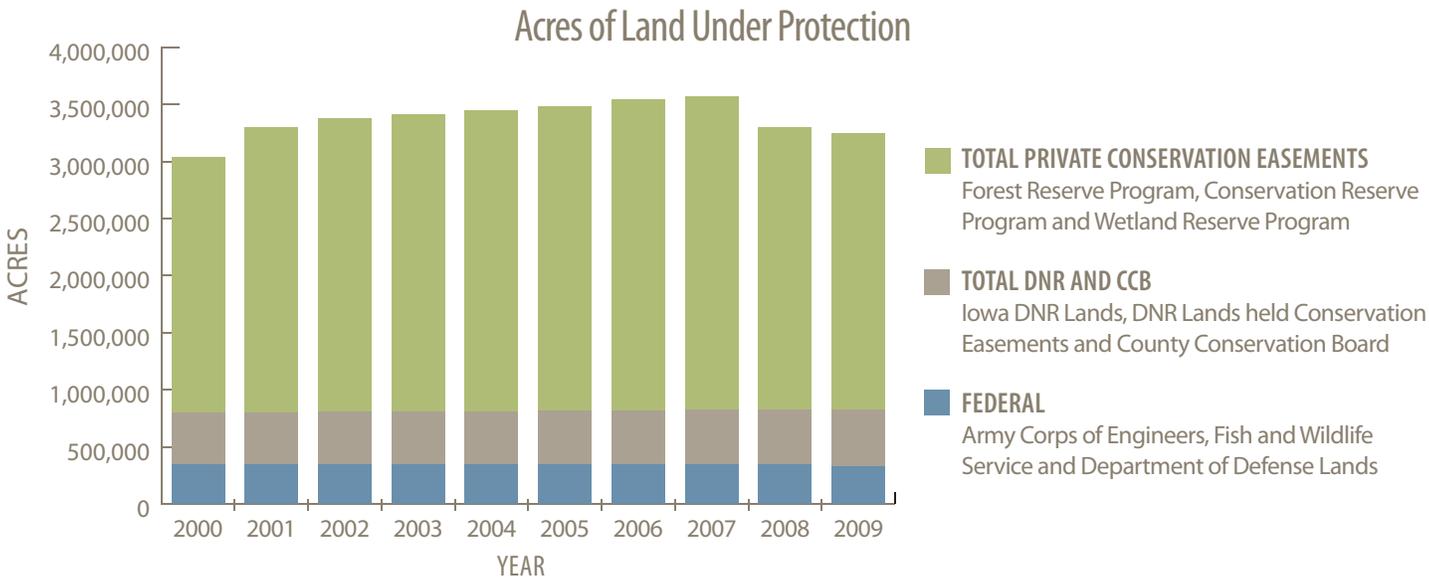
Responsible management of our lands, whether farmland, forest, grassland or an urban backyard, is vital for our environment's health. About 63 percent of Iowa is devoted to rowcrop agriculture, making it important for farmers and landowners to use conservation systems that protect our natural resources. Last year, landowners working with DNR-funded watershed efforts created 577 new conservation practices. Those practices will keep 37,249 tons of sediment and 119,186 pounds of nutrients out of streams and lakes each year, all in addition to conservation practices already on the ground.



Iowa River in Iowa City



Loess Hills



“Iowa’s waterways and natural resources face serious challenges. We need more voluntary conservation incentives for farmers for clean water and soil conservation, and more funding for clean water, soil conservation, fish and wildlife habitat and restoring wetlands to help protect against future flooding. These vital programs will benefit all Iowans for current and future generations.”

Sean McMahon,
State Director of The Nature Conservancy in Iowa

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DEER

Iowa's deer population fell last year by 58,000 deer or 17 percent. Most of Iowa's counties are at or near their deer population goal.

Iowa hunters continue to do their part in managing the state's deer herd by taking more antlerless deer. For five years in a row, Iowa has landed near the top of the list for percentage of antlerless deer harvested. That's brought Iowa's world-class deer herd closer and closer each year to management goals.

As in recent years, the number of bucks and does continues to fall statewide. Almost half of Iowa's counties have already met or surpassed goals for their deer populations, with another 45 percent of counties close to meeting goals in the next couple of years. Since last year, the overall deer population has fallen by about 58,000.

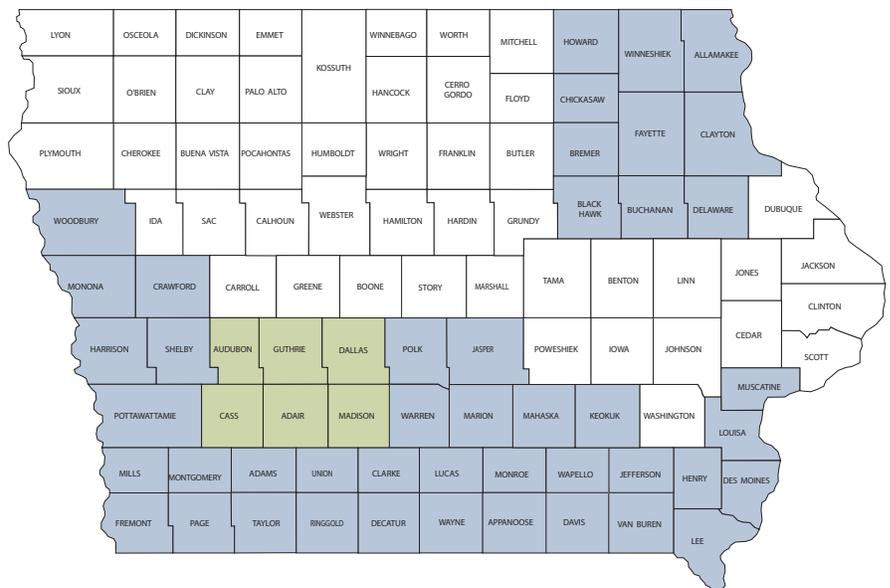
Yet, deer numbers can sometimes appear to be higher as deer cluster in small areas or urban neighborhoods, giving the

impression of a larger population. Since these groups often form on private land, the DNR works with rural landowners and urban communities on local deer management plans to address these deer. DNR biologists also provide guidance and assistance to landowners to effectively deal with damage from wildlife, including deer. Working with hunters, landowners and communities also helps reduce populations to a level that's better for drivers on Iowa's highways.

If deer numbers continue to fall at the current rate, Iowa's deer herd will meet its overall population goal in 2011 in most counties. The gradual decline will happen as each county meets its population goals. From there, the goal is keeping numbers stable at a level that works for hunters, wildlife viewers, drivers, farmers, homeowners and all Iowans.

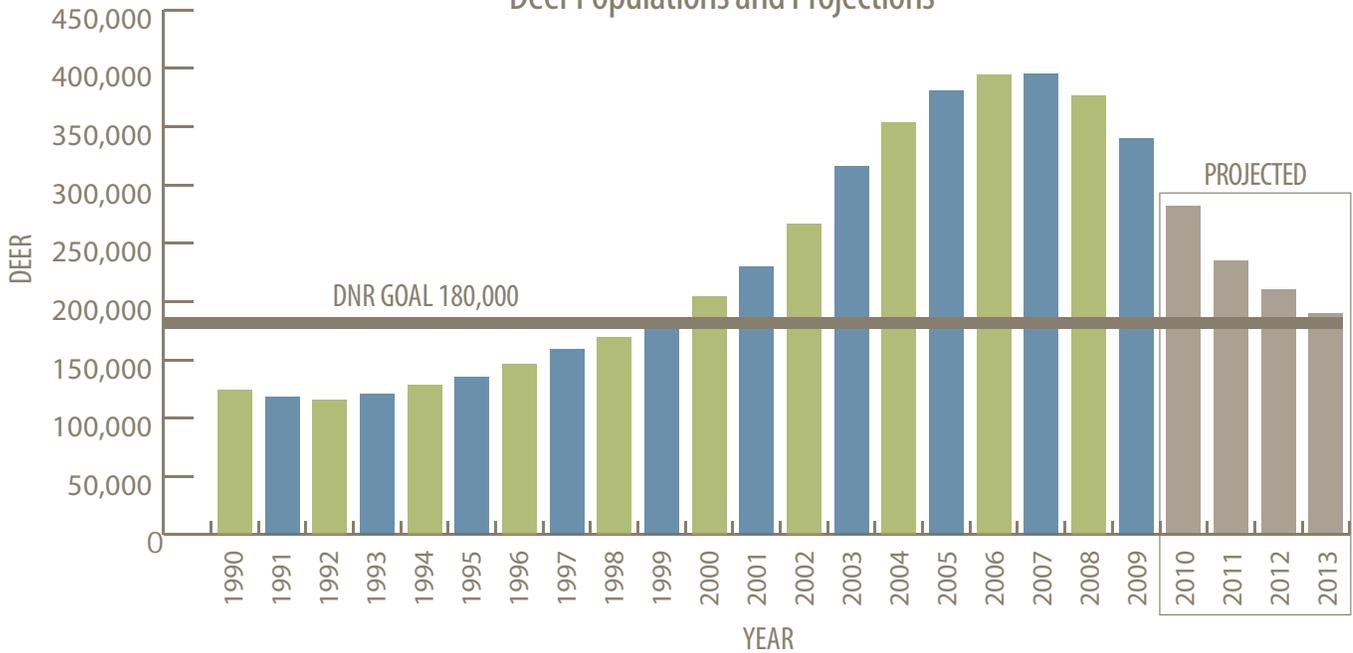


2009 Simulation Results



□ at or close to goal ■ increased harvest needed to reach goal ■ current harvest reaches goal

Deer Populations and Projections

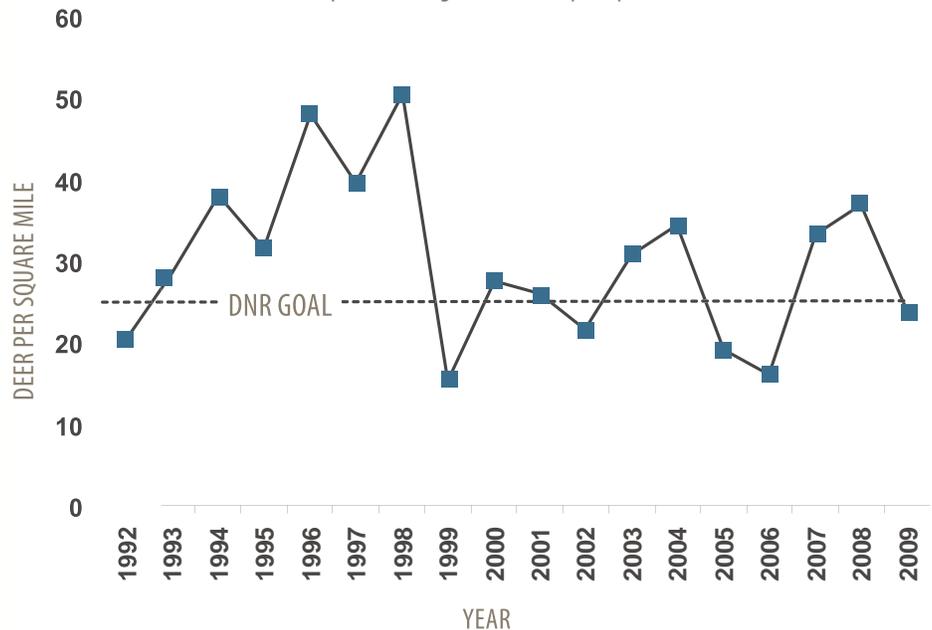


CASE STUDY: BLACK HAWK WORKS TOWARD TARGET

Helicopter surveys in the urban Waterloo and Cedar Falls area in the early 1990s showed that deer numbers were quickly climbing. Now, after a cooperative local effort between city, county and state leaders, deer numbers have more than met population reduction goals.

The effort kicked off in 1994 with the state's first controlled urban deer hunt, and by 1998, deer numbers fell below the goal of 25 deer per square mile within the core area. Since then, annual controlled hunts have taken about 50 to 75 deer each year, keeping Black Hawk County's deer population close to its target number.

The density of deer sighted during annual winter helicopter surveys of Cedar River greenbelt area in Black Hawk County. The dotted line represents the goal of 25 deer per square mile for this area.



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GAME BIRDS

The pheasant population continued its three year decline, while turkeys and geese made a comeback.

PHEASANT

The one-two punch of habitat loss and harsh weather has taken its toll on Iowa pheasants, as numbers of both birds and hunters continue to drop.

Pheasants do fine in average winters and springs in Iowa, but historical amounts of snow and rain in recent years have made winter survival and spring nesting extremely difficult. When Iowa receives more than 8 inches of rain during the nesting season, only 42 percent – or less – of nests are successful. And when that happens, pheasant populations can only fall. This is also the first time in almost 50 years that snowfall has stayed 20 percent above normal for four years in a row.

While we can't control the weather, Iowans do make the decisions on how to manage land. With about 98 percent of Iowa's land in private ownership, individual Iowans greatly impact the amount of pheasant habitat. Between 1990 and 2005, Iowa lost almost 2,500 square miles of habitat – enough to create an eight-mile-wide strip of habitat from Omaha to Davenport.

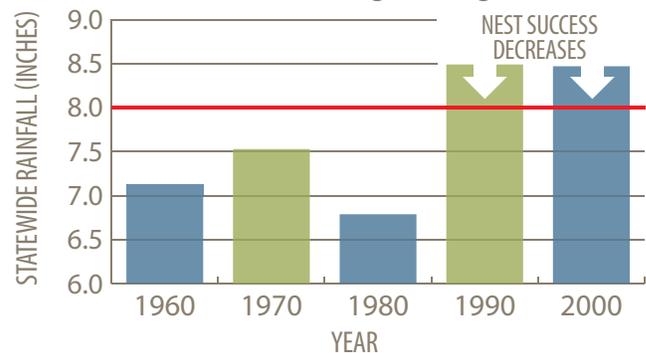
These challenges create a tough hunting experience, and in turn, a blow to the state's economy. Last year, hunters harvested only 383,000 birds, a drop of more than 248,000. Plus, 23,000 fewer hunters took to the fields, meaning less spending on meals, hotels, gas and equipment in Iowa communities and fewer license sales and taxes in the state's general fund.

SNOW – Winter Survival

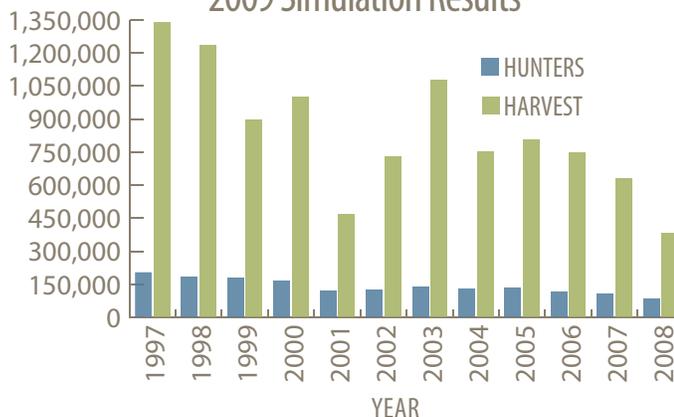
Dec - March	Historical Perspective
2006 - 2007	20 percent above normal
2007 - 2008	10 th snowiest
2008 - 2009	5 th snowiest (Nov-Jan)
2009 - 2010	1 st snowiest (Dec-Feb)

Since 1962 – This is the first time snowfall has stayed 20 percent above normal four years in a row.

Rain During Nesting

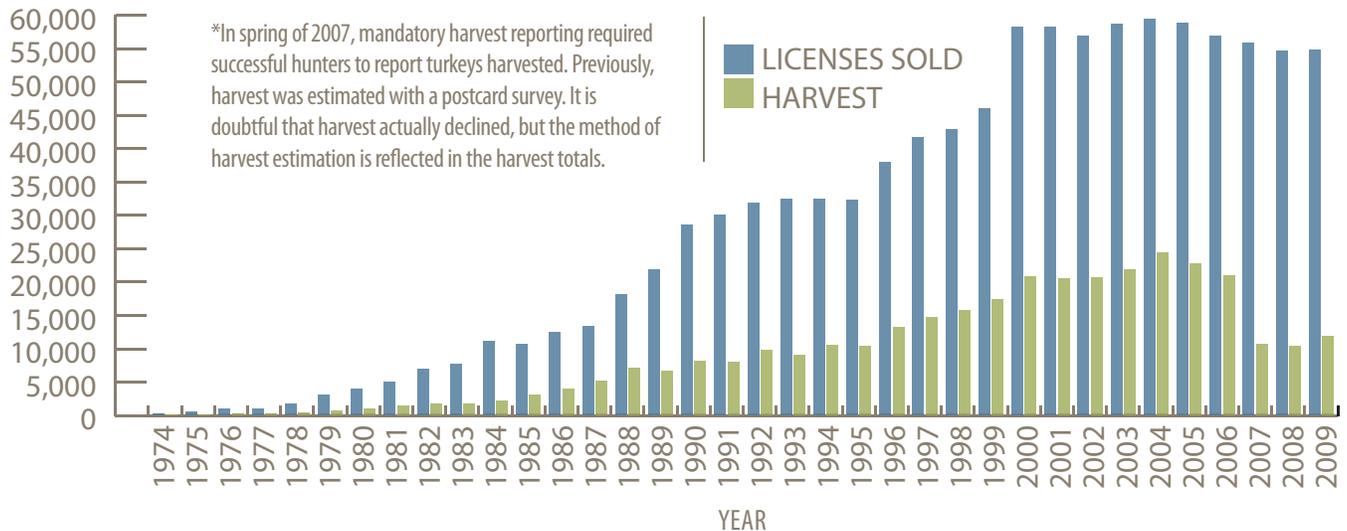


2009 Simulation Results



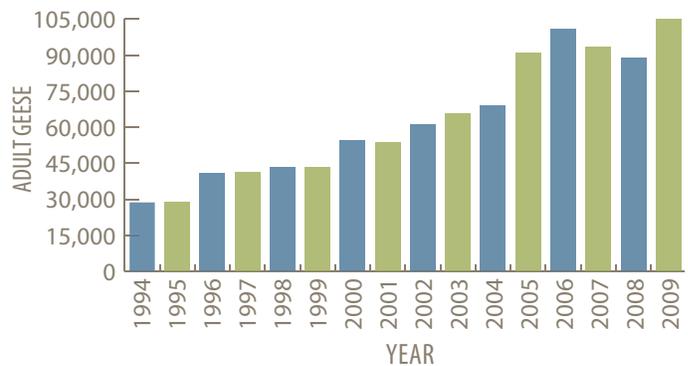
WILD TURKEY

Not all hunters looking to bag a bird face the currently limited opportunities of pheasant hunting. Wild turkey numbers remain strong across the state, especially in western and northeastern Iowa. In 2009, hunters harvested almost 12,000 birds. In recent years, spring and fall license sales have remained relatively stable, even with slight regional turkey population dips.



CANADA GEESE

Canada geese are close to population goals in Iowa, at about 105,000 birds. That number may seem higher in urban areas around ponds, but the increase in urban geese isn't enough to offset falling numbers in rural areas. The population of geese that remains in Iowa year-round continues to be stable, but more geese from places to the north like Canada – and even the arctic – winter in Iowa. If the global climate continues to change and winters grow warmer, more geese will spend their winters in Iowa.



“Iowa’s pheasants and quail are at recent historical low populations because of many factors. To recover, we will need more than cooperation from the weather. Our best opportunities for upland birds are to regain the habitat lost through thousands of CRP contracts expiring, ensure that wildlife friendly mid-contract management is accomplished on existing CRP acres, and encourage enrollments in Farm Bill conservation practices that benefit wildlife. We must also actively manage public lands with upland birds in mind, and expand Iowa’s meager inventory of public wildlife areas.”

Jim Wooley,
Director of Field Operations, Quail Forever Division, Pheasants Forever

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WILDLIFE DIVERSITY

Habitat continues to be a threat to wildlife, but strides have been made in some areas

When it comes to supporting a wide range of wildlife in our state – a state that’s one of the most altered landscapes in the nation – the key is habitat. We’ve made great strides in some areas, yet we continue to have species in real need of help.

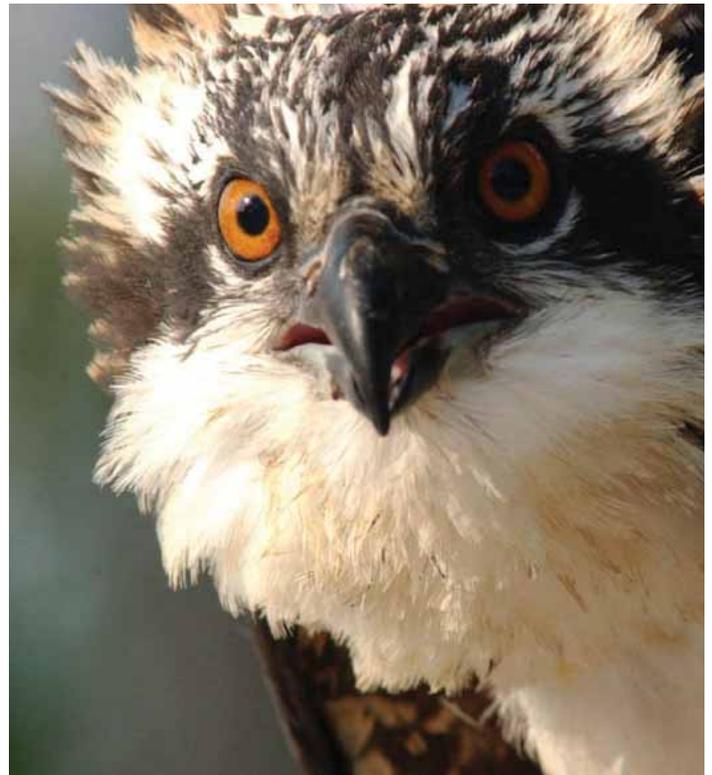
Iowa has seen remarkable wildlife comebacks, often from the brink of extinction. Bald eagles, gone from Iowa as a nesting species 50 years ago, now nest in at least 85 Iowa counties with nearly 300 nests predicted in 2010. Reintroductions of osprey, peregrine falcons, trumpeter swans and river otters have been successful.

As Iowa’s forested areas have increased in recent years, songbirds, raptors, small mammals, amphibians, reptiles and butterflies have responded, thriving and in some cases, increasing their numbers. DNR foresters and wildlife biologists are working to further improve forests for wildlife, including managing savanna areas, connecting isolated or fragmented forest tracts, and preserving more old-growth forest.

Real challenges still remain, though. Grasslands continue to dwindle, losing critical habitat for increasingly rare species like jackrabbits, short-eared owls, prairie chickens, Franklin’s ground squirrels, Northern Harrier hawks and more. If Iowa continues to lose grassland, as landowners withdraw more acres from the federal Conservation Reserve Program, we could also risk losing skipper butterflies, smooth green snakes and other species. Poor water quality in Iowa’s streams is hurting populations of freshwater mussels, crayfish, some non-game fish and other aquatic life.

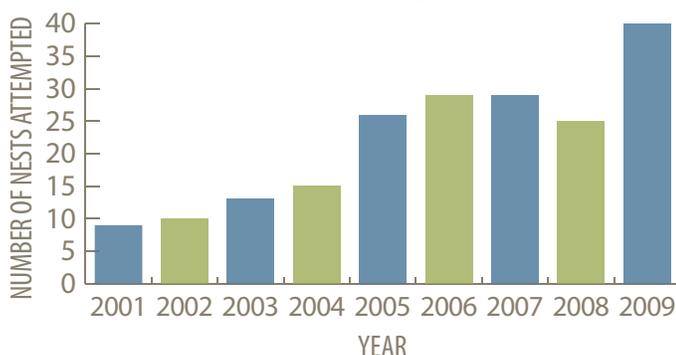
A number of species in Iowa, including waterfowl and dragonflies, depend on wetland habitats to survive. While

some Iowans are restoring wetlands, others continue to drain or fill wetlands, often for agricultural, residential or industrial development. Pollution in runoff that enters wetlands hurts amphibians, reptiles and other wildlife that depend on the habitat. Adding more grassland buffers around wetlands would not only provide additional and improved habitat, but also improve water quality.



Osprey

Trumpeter Swan Iowa Nesting Data 2001 -2009



Trumpeter swans

CASE STUDY: STUDY LOOKS TO HELP DECLINING IOWA JACKRABBITS

As the number of white-tailed jackrabbits in Iowa continues to decline, efforts to save the state's only wild hare are increasing.

A small group of jackrabbits near Ames – a rare find these days – is giving a group of researchers a chance to glimpse into how the hares live and what we can do to help them survive. The jackrabbit's habitat, notably western and northwestern Iowa pastures, grasslands, and oat and hay fields, has dwindled in recent decades as landowners convert it into row crop farmland. With habitat lacking, Iowa populations of the white-tailed jack have been declining steadily.

"During the early 1960s, Iowa had around four million acres of oats on the landscape. By 2009, that had fallen to around 100,000 acres, a 98 percent decrease," said DNR Biologist Todd Bogenschutz. "Oats, alfalfa and pasture were important habitats for Iowa jackrabbits and it's obvious that they haven't been able to cope with the loss."

On the Iowa State University Agricultural Engineering and Agronomy Research Farms between Ames and Boone, DNR and ISU researchers are watching the movements and seasonal habitat use of a relatively isolated group of jackrabbits. In a unique radio telemetry investigation, researchers capture the hares, take DNA samples and place radio tags. By following the radio-tagged jackrabbit once it's released, researchers can identify the hare's home range and den sites, and follow daily and seasonal movements. Using this information and by comparing DNA samples to others from across Iowa and South Dakota, researchers can learn if this small band of hares is connected to others across the Midwest. If not, the Ames group runs the risk of becoming inbred and eventually disappearing.

A "species of greatest conservation need" in Iowa, white-tailed jackrabbits are an indicator species for other grassland wildlife. If jackrabbits thrive, so will other species. But if they struggle, it spells bad news for a large variety of wildlife. Researchers hope biologists can use the study's findings to make sound management recommendations on this dwindling native species.



White-tailed jackrabbit

"The jackrabbit study looks closely at a species of great conservation need. It's one of many wildlife or plant species that indicate the overall health of our ecosystem; and in turn, the quality of our life. Each species plays a key role in our environment. To lose even one closes the door on future scientific advances or simply affects our understanding and enjoyment of the outdoor world. "

Loren Forbes,
Vice-President, Iowa Wildlife Federation

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CLEAN AIR

Air pollution from fine particles caused more bad air quality days in 2009.

If you've ever made note of that "hazy shade of winter" when snow covers the ground and the air is still, you've seen the result of pollution in the air.

That haze comes from high levels of fine particles in the air. From 2007 to 2009, air pollution levels exceeded public health thresholds 125 times at sites across Iowa – up 33 percent from the previous reporting period. Most of those came from high levels of fine particles.

In Iowa, most fine particle pollution forms in the atmosphere when ammonia (from animal feeding operations, fertilizer application and other natural sources) combines with sulfuric or nitric acid (from power plants, automobiles and other combustion sources) to create tiny particles. Smoke also sends fine particles directly into the air.

These tiny specks are just one-thirtieth the diameter of a human hair. But when they lodge in our lungs, they don't break down, creating serious health risks. Poor air quality is unhealthy for everyone, but especially for children, senior citizens and people with respiratory conditions like asthma. With cleaner air, there are fewer trips to the emergency room and lower respiratory illness rates. It also keeps Iowa's wildlife and plant life thriving.

The DNR also investigates air quality issues that reach beyond fine particles and other measurable pollutants. The DNR continues to search for solutions for local issues like wood-fired boilers as well as global issues like climate change.

That work includes annually tracking greenhouse gas emissions from ethanol plants and major sources of air pollution. At these sites, greenhouse gas emissions from burning fossil fuels, which contribute to global climate change, increased 2.6 percent from 2007 to 2008.

Cleaner, healthier air requires both local and regional efforts. New federal regulations will help lower air pollution levels through activities like improving fuel efficiency and implementing pollution controls for power plants. A study underway by Iowa livestock producers and EPA is investigating how ammonia emissions from animal feeding operations contribute to the fine particle problem.



Cargill Power Plant



Briggs Woods Lake watershed, Hamilton County

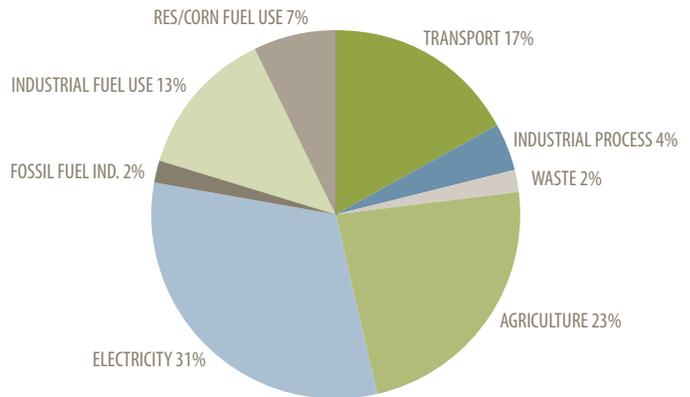
CLIMATE CHANGE

In Iowa, greenhouse gas emissions come from a number of sources, including agriculture, producing electricity, transportation and burning fuel. These emissions contribute to global climate change, which can have dramatic consequences for Iowa's natural resources and Iowans' quality of life.

Climate change can create more snow and rain annually, intense rain events and stronger storms. Increased snow and rain have already taken a toll on wildlife like pheasants. Climate change can also lead to longer periods without rain, which would impact wildlife and agriculture.

Climate change can result in more freeze-thaw cycles and increased variability in temperatures, which would hurt wildlife and aquatic life. Brook trout require cold streams with good water quality. As water temperatures rise, trout struggle to survive.

Sources of Greenhouse Gas Emissions



Total Number of Days Exceeding Air Quality Standards 2007 - 2009



*Total exceedances include multiple monitoring locations. Number of episodes does not describe intensity or duration.

“The quality of air within Iowa is a top concern to the Iowa Department of Public Health. The toxins in the air we breathe can cause more injury than the toxic substances we touch or ingest. Healthy air is a quality of life issue for people who suffer from asthma and other respiratory diseases.”

Stuart C. Schmitz, M.S., P.E.

Principal Investigator / Environmental Toxicologist

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CLEAN LAKES

Lakes that have targeted efforts continued to improve in 2009.

From Diamond Lake in Dickinson County to Lake Geode in Henry County and points in between, Iowans continue to come together in their communities to create cleaner and clearer water in their local lakes.

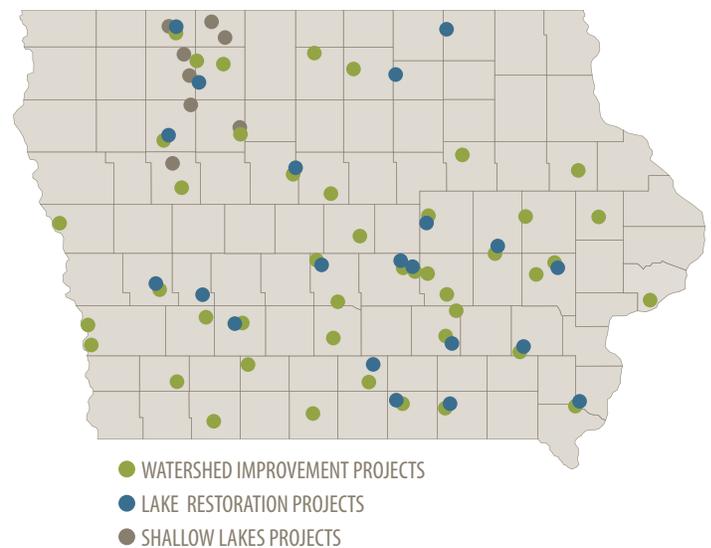
In many lakes, excess soil and sediment washing in from the area draining to the lake, called the watershed, make the water cloudy and murky. Nutrients that also wash in from the watershed lead to algae blooms that make swimming and boating challenging. Local groups are partnering with the DNR's Lake Restoration and Watershed Improvement programs, as well as other organizations, to make changes on the land and in the water to battle these problems.

You can see about a yard down into the water – enough to see your toes – in 65 of the state's 132 publicly owned lakes monitored by the DNR. Overall, statewide water clarity and nutrient levels remain similar to previous years. While sediment rates have changed little since 2007, they have decreased overall since the DNR began monitoring lakes in 2000.

Efforts need to continue to reduce sediment and nutrients reaching the lakes, to eliminate rough fish that can stir up sediment and nutrients on the lake bottom, to increase the amount of aquatic

plants taking root in lakes and to use selective dredging where appropriate. The result of these efforts: cleaner lakes that provide better swimming and boating, and a place where aquatic life can thrive. That means better fishing, too.

Lake Improvement Projects



East Okoboji Lake

CASE STUDY: BRINGING A SHALLOW LAKE TO LIFE



Dickinson County's Diamond Lake is a showcase example of how Iowa's shallow natural lakes are responding to a strong new management approach. Once shimmering blue jewels of pristine prairie landscapes, Iowa's shallow lakes have

been used and degraded. Silt and algae now cloud once transparent waters; destructive, invasive bottom feeders, like carp, have pushed out native fish. Valuable aquatic plants and the wildlife they harbored have been severely reduced in number or, in the case of several species, have vanished altogether.

Historically, shallow lakes would go through natural dry cycles every decade or so, allowing the lake bottom to dry out and slowly refill. That gave way to lush new plant growth that holds sediment and nutrients out of the water and creates food and habitat for birds and other wildlife. But people's demands on the land and the water have kept this natural, rejuvenating cycle from occurring as it should.

Following a complete lake draw-down two summers ago, Diamond Lake is slowly refilling. But this restoration is not a one-time fix. The DNR's new management approach will adjust water levels every few years to mimic the natural drought cycle shallow lakes require to be healthy. "It's really hard to believe that this lake has just been pea soup green for the past 80 years," said DNR Fisheries Biologist Mike Hawkins. "Today, the water is so absolutely clear, so transparent that you can see every single detail of what's on the bottom. We're seeing a very strong vegetative response and wildlife is increasing. Birdlife is everywhere."

Lush growths of bulrush, arrowhead, burr reed and cattail stretch from the shoreline to the edge of the lake's open water center. Sedge wrens, rails, yellow-headed blackbirds and other marsh birds call from among the vertical threads of the living green curtain. The lake hosts scores of marsh creatures – tadpoles, water boatman, dragonflies and leopard frogs. As Diamond Lake historically supported game fish, the DNR restocked the lake with 80,000 fingerling yellow perch in 2009 and will add young northern pike in 2010. As the water quality and habitat of Diamond Lake improve, so will hunting, fishing and wildlife viewing opportunities, bringing visitors and tourism dollars for nearby communities.

"What we're basically seeing here is the equivalent of taking the Dead Sea and turning it into a viable, living resource," said Gary Phillips, an aquatic plant specialist and environmental studies coordinator at Iowa Lakes Community College. "I think you're certain to see phenomenal fish growth at Diamond Lake, and there will certainly be a significant increase in the number of ducks and geese being seen by waterfowl hunters."



Wetland scientists Gary Phillips, Mike Hawkins and Mark Gulick examine newly emerged aquatic plant life at Diamond Lake.

"The Diamond Lake project is an excellent example of our how public and private agencies and organizations can partner to restore shallow lakes and marshes across Iowa. This project along with many other projects will help create stepping stones of perpetually protected and managed shallow lake complexes and marshes throughout Iowa to provide quality wetland food and habitat resources for waterfowl and other wildlife."

Mike Heller,
Regional Director Iowa Ducks Unlimited



WATER QUALITY

While the water quality index still categorizes Iowa's waters as poor, the index increased six points in 2009.

Water quality in Iowa's streams made a considerable improvement in 2009 over previous years, yet the streams' average water quality score still remains in the "poor" category.

The Iowa Water Quality Index works by measuring different factors that affect fish and aquatic life, drinking water, recreation and aesthetics. Monitors collect data monthly from 75 sites on major Iowa rivers. The index places these varied data into an equation that gives an overall reading of the health of Iowa's streams and rivers.

In 2009, Iowa streams scored an average water quality index score of 46, landing in the index's "poor" category. Despite that ranking, the 2009 score is a marked improvement over the previous average score of 40. While it's difficult to immediately pinpoint the reasons for the improvement, historic floods in 2008 washed significant amounts of pollutants into Iowa streams, largely impacting that year's score. Since 2000, the

water quality index has dipped as low as 38 and reached as high as 47.

"Tracking the water quality index scores through time will help the DNR measure the effectiveness of our water quality improvement programs," said Mary Skopec with DNR Watershed Monitoring and Assessment.

To improve the statewide scores, Iowa needs to reduce the amount of sediment washing into streams, especially soil from streambank erosion. We also need more work to reduce runoff by helping water soak into the ground or retaining it in wetlands or ponds.

We can better target efforts to accomplish these goals by using results from each of the monitoring stations. The results also help us look at a watershed's impact on water quality over a number of years. By identifying the largest influences on a watershed's health, the DNR, local groups and other organizations can target problems to improve water quality locally and across the state.



South Fork Maquoketa River

CASE STUDY: NORTH IOWA STREAMS SEE IMPROVEMENT

Iowans are working to improve the state's streams one watershed at a time. Or in the case of Staff and Beaver creeks in Howard County, two at a time. The local effort for cleaner water in the creeks, both tributaries to the Upper Iowa River, has seen results in just a few short years – including dropping nitrate levels by 40 percent.

Stream monitoring in 1999 pinpointed the streams as some of the largest contributors to high nitrate levels in the Upper Iowa River. But since the local watershed effort launched in 2005, it has worked with nearly 75 landowners and farm operators in the streams' watersheds – the area of land that drains into the streams – to install and use more than 200 conservation practices.

"We have been very successful in working together to implement many conservation practices which are paying off in improved water quality," said Neil Shaffer, a lifelong Howard County resident who coordinates the watershed effort. "We are continuing to work hard to improve water quality in the watersheds and the creeks are testament that a targeted approach to improving water quality can be successful."

Those practices, or ways to manage the land for better water quality, have targeted problem areas with the goals of reducing the amount of sediment and nutrients reaching the streams. Grassed waterways and terraces help keep soil on the land and out of the water. Landowners diverted field drainage tile lines to drain into wetlands that trap and filter nutrients from

runoff water. New manure storage structures at open livestock feedlots help operators better handle manure.

And the practices have worked. Nitrate levels have dropped by more than 40 percent, according to recent monitoring reports. The amount of sediment trapped by practices and kept out of the creeks each year would fill a line of dump trucks more than three miles long.

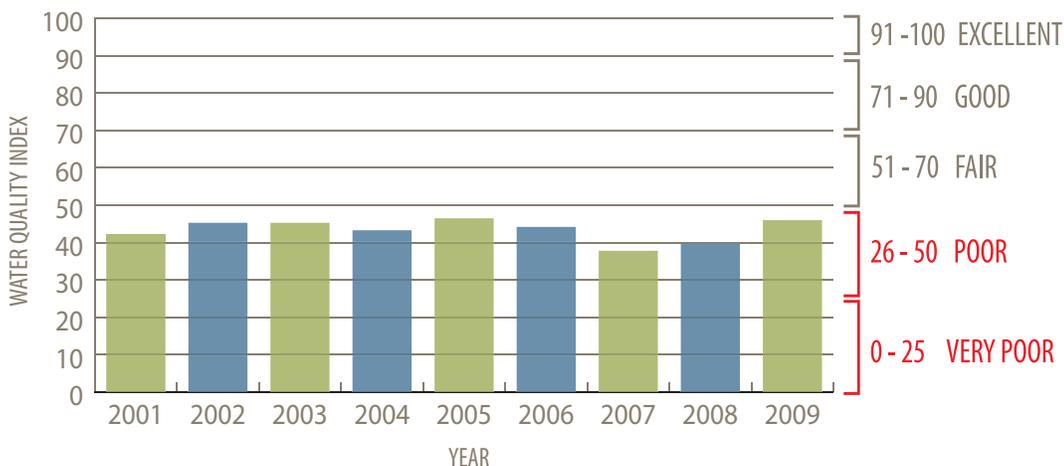
"Continued water sampling through 2009 has shown a decline in the amount of nitrogen being delivered to the Upper Iowa River from both creeks," said Bill Kalishek, DNR fisheries biologist. "This will benefit aquatic life in Staff and Beaver Creeks and improve water quality to the Upper Iowa River."

Why the concern over nitrate and sediment? Sediment can make water cloudy, damage the habitat of fish and other aquatic life, and fill in lakes and streambeds. High levels of nutrients, like phosphorus and nitrate, can cloud the water and lead to poor aquatic life diversity.

"Iowans are taking ownership of their streams, lakes and rivers, and efforts like the one at Staff and Beaver creeks show they're making great strides in improving them," said Steve Hopkins, with the DNR's Watershed Improvement Program.

The Howard Soil and Water Conservation District began the watershed project in 2005 with guidance and financial assistance from DNR, the Iowa Department of Agriculture and Land Stewardship and USDA Natural Resources Conservation Service.

Iowa Water Quality Index scores



"I have watched the mussel population decline dramatically in the North Raccoon River over the past 20 years. Small live mussels are rare. Paddlers are reporting rashes after paddling in the Raccoon. In 2009 the river ran very dirty much of the year. This year the river looks much better. I would like to plead to our farmers, please buffer your waterways and intakes. Please reduce your nitrogen and phosphorus to what is necessary. Please manage your manure properly. Please keep your cattle out of the streams. Please take advantage of all available programs to help retain your farms' value and protect your ponds, lakes and rivers."

Mike Delaney,
President of the Raccoon River Watershed Association



STATE OF THE ENVIRONMENT